

# PREPARATION AND APPLICATION OF NATURAL ZEOLITE/ZnO MATERIAL AND ITS APPLICATION ON THE PHOTODEGRADATION OF CONGO RED AND RHODAMINE B UNDER ULTRAVIOLET IRRADIATION

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## ABSTRACT

This research aims to study the preparation characterization and applications of natural zeolite/ZnO material on the photodegradation of congo red and rhodamine B under ultraviolet irradiation.

Preparation of natural zeolite/ZnO material conducted by precipitation method. Activated zeolite was mixed by  $\text{Zn}(\text{CH}_3\text{COO})_2 \cdot 2\text{H}_2\text{O}$  and ethanol, and then stirred, heated and added by NaOH. The resulting precipitate was dried and calcined in muffle furnace. Natural zeolite/ZnO material was characterized by using XRD, FTIR, UV-Vis and SEM-EDX. Application of natural zeolite/ZnO material was tested by photocatalysis activity in the photodegradation process of congo red and rhodamine B.

Natural zeolite/ZnO material was successfully synthesized by precipitation method with crystal size was 24.26 nm and showed wavelength number of ZnO at  $451.79 \text{ cm}^{-1}$  dan  $519.20 \text{ cm}^{-1}$ . Band gap energy of natural zeolite/ZnO material was 2.96 eV. The crystal size of ZnO and natural zeolite were  $0.313 - 0.370 \mu\text{m}$  and  $0.384 - 1.076 \mu\text{m}$  respectively. Activity test of natural zeolite/ZnO material on the photodegradation of congo red and rhodamine B resulted the photodegradation percentage 99,41 % and 99,54% respectively.

Kata Kunci: *natural zeolite/ZnO, photodegradation, congo red and rhodamine B*